

### **THE OFFICE ACTION**

In the Office Action issued June 17, 2003, the Examiner rejected claims 1-5, 8 and 9-11 under 35 U.S.C. §112, second paragraph, as purportedly being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. The Examiner also rejected claims 1-3, and 9 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,246,866 to Nasu et al. ("Nasu"). The Examiner rejected claims 1-4, and 8-10 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,274,240 to Mathies et al. ("Mathies") in view of U.S. Patent No. 5,627,643 to Birnbaum et al. ("Birnbaum"). The Examiner also rejected claims 5 and 11 under 35 U.S.C. §103(a) as being unpatentable over Nasu in view of U.S. Patent No. 5,637,458 to Frankel et al. ("Frankel"). The Examiner also rejected claims 1-3, 8, 9, 11, and 27-29 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,874,492 to Mackay ("Mackay"). The Examiner indicated that claims 7, 13, 15, 16-19 and 20-26 were allowable.

### **REMARKS**

The Office Action has been careful consideration by the Applicants. The Applicants respectfully request reconsideration of the application in light of the above amendments and the following comments. Claims 1-5, 7-11, 13 and 15-29 remain pending in the application.

#### **A. The §112 Rejection**

The Examiner rejected claims 1-5, 8 and 9-11 under 35 U.S.C. §112, second paragraph, as being indefinite. Specifically, the Examiner stated that the term "width" in claims 1-9 renders the claims indefinite because it is unclear as to what direction the term would refer to i.e. perpendicular or parallel to the direction of the samples. Applicants respectfully traverse.

Applicants submit that the term "width" can refer to and encompasses either direction, i.e. either perpendicular to the direction of migration of the samples or parallel thereto and further submit that the claims are not indefinite based on the disclosure in the specification. Specifically, applicants would like to direct the Examiner's attention to the paragraph starting on page 9, line 27 of the application, which discusses an arrangement (as shown in fig. 5a) in which the scanner extends across the sequencing plate perpendicularly to the capillary tubes and scans in a

direction parallel thereto (i.e. along the direction of migration of the samples). Similarly, the paragraph starting on page 10, line 27, discusses a similar arrangement (as shown in fig. 6a) in which the scanner extends across the device in a direction parallel to the length of the capillary tubes and scan in a direction perpendicular thereto. Thus, applicants submit that the claim is not indefinite and in fact encompasses both arrangements.

**B. The §102 Rejection Over Nasu**

With respect to the Examiner's 35 U.S.C. §§102 rejection of claims 1-3 and 9 over Nasu, applicants respectfully traverse and submit that the Examiner is not considering all the limitations of the present claims. In support of his rejection in the final office action, the Examiner stated that "Nasu apparatus does teach a full width array scanner that scan the entire width of the apparatus (see figure 1 item 21)". Even assuming this to be true, applicants submit that Nasu still fails to teach all of the elements of the present claims because it fails to teach wherein the full width array scanner is capable of scanning an entire width of the separation apparatus simultaneously, as required by the claims. Specifically, Nasu clearly discloses that the electrophoresis unit is scanned in a direction perpendicular to the direction of electrophoresis as the polygon mirror 12 rotates across the unit. Thus, the whole width of the unit is scanned in some finite amount of time as the mirror rotates, which is not simultaneously. In this respect, Nasu states "the rotary polygon mirror 12 is rotated by the motor 13 such that a speed of the laser beams scanning the electrophoresis subunit 15 (namely a main scan speed) is much faster than a speed of the DNA fragments migrating in the gel in a y-direction (namely a sub-scan speed) (col. 5, lines 41-50). Further, "the scanning in the x-direction is repeated successively in the direction 18 of the electrophoresis, namely in the y-direction" (col. 5, line 68 – col. 6, line 2).

Thus, although the scanning in the x-direction is much faster than the DNA migration, scanning of the entire width of the gel does not occur simultaneously, as presently claimed. Rather, Nasu teaches scanning along the x-direction as the polygon mirror is rotated. Thus, Nasu fails to teach or suggest claims 1 or 9 or those dependent therefrom. Withdrawal of this rejection is respectfully requested.

**C. The §102 Rejection Over Mackay**

In the Office Action, the Examiner rejected claims 1-3, 8, 9, 11, and 27-29 under 35 U.S.C. §102(b) as being anticipated by Mackay. Applicants respectfully traverse.

Mackay fails to anticipate the present claims for at least the following reasons. First, and with respect to claims 1-3, 8, 9, 11, and 29, Mackay fails to disclose a "full width array scanner" as that term is used in the present application. It is without question that a patentee may be his own lexicographer and is free to define claim terms in any manner not repugnant to the ordinary meaning of a term. *Johnson Worldwide Associates, Inc. v. Zebco Corp.*, 50 USPQ2d 1607 (Fed. Cir. 1999). In the present case, the "full width array scanner" as claimed in the present application is described and defined on page 8, lines 7-26. The scanner is defined as of the type used in document scanners. Such scanners are distinct from CCD's such as those used in Mackay. Although it may be argued that in everyday usage the term "full width array scanner" might be broad enough to encompass CCD's, the discussion in the specification clearly differentiates the present scanners from prior CCD devices. In fact, and as mentioned in the specification, the full width array scanner of the present invention is distinct from and superior to such devices in that they have about 10 times the light throughput as compared to a CCD (see page 13, lines 6-17 of present application). Thus, applicants submit that Mackay fails to disclose or suggest the use of a full width array scanner.

Further, and with respect to claims 27 and 28, Mackay fails to disclose wherein the light source is attached to the means for detecting fluorescent light. The Examiner attempts to argue that Mackay teaches that the UV light source is "indirectly" attached to the detector through a computer that controls both detector and light source. The Examiner's arguments here appear to be disingenuous at best. What is clearly meant in the claim and illustrated in the specification is that the light source is physically attached to the detector. Again, the claims must be read in light of the specification. Clearly, to function efficiently, the excitation light source in all DNA detecting systems must be electronically controlled by a computer or some other controller to be directed onto the relevant parts of the DNA sequence plate to be properly detected. Thus, if the Examiner's interpretation of the claim language was proper, then the recited limitation would not be any limitation at all since all such systems would have this arrangement. As described in the present specification and the accompanying figures, the applicants clearly intended the phrase to mean

that the light source is physically attached to the detector. Because Mackay fails to disclose such an arrangement, applicants submit that the claims are patentable thereover.

**D. The §103 Rejection Over Mathies in View of Birnbaum**

With regard to the Examiner's §103 rejections based on Mathies in view of Birnbaum, applicants respectfully traverse. Specifically, it cannot fairly be said that a combination of Mathies and Birnbaum discloses or suggests a full-width array scanner capable of scanning an entire width of the separation apparatus simultaneously. The Examiner states that "Birnbaum do teach scanner that scans the entire distance in the direction of the samples in the capillary tube." However, Birnbaum relates to only a single capillary tube. The teachings of Birnbaum cannot be combined with the teachings of Mathies because there is no suggestion to combine these teachings. This is particularly true in light of the fact that Birnbaum only discloses a separation apparatus comprising a single capillary and a process that would be unsuitable for use in a multi-capillary system. In addition, neither reference discloses the use of a "full width array scanner", as that term is used in the present invention as detailed above. Rather, they use CCD devices. For these reasons, applicants request withdrawal of this rejection.

**E. The §103 Rejection Over Nasu in View of Frankel**

With regard to the Examiner's §103 rejection of claims 5 and 11 based on Nasu in view of Frankel, applicants respectfully traverse. Specifically, it cannot fairly be said that a combination of Nasu and Frankel discloses or suggests a full-width array scanner capable of scanning an entire width of the separation apparatus simultaneously. Even if the proposed combination of the two references were proper, such a combination would still not render the claims obvious based on the above detailed argument with respect to Nasu alone. Specifically, Nasu fails to teach all of the elements of the present claims because it fails to teach wherein the full width array scanner is capable of scanning an entire width of the separation apparatus simultaneously, as required by the claims. This is discussed in detail above with respect to Nasu. Frankel also fails to disclose or suggest such a detector. Thus, any proposed combination of the two references fails to disclose or suggest this element as well.

### **CONCLUSION**

For the reasons detailed above, it is respectfully submitted all claims remaining in the application (Claims 1-5, 7-11, 13 and 15-29) are now in condition for allowance. The foregoing comments do not require unnecessary additional search or examination.

No additional fee is believed to be required for this Response. However, the undersigned attorney of record hereby authorizes the charging of any necessary fees, other than the issue fee, to Xerox Deposit Account No. 24-0037.

In the event the Examiner considers personal contact advantageous to the disposition of this case, he/she is hereby authorized to call Joseph Waters, at Telephone Number (216) 861-5582.

Respectfully submitted,

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